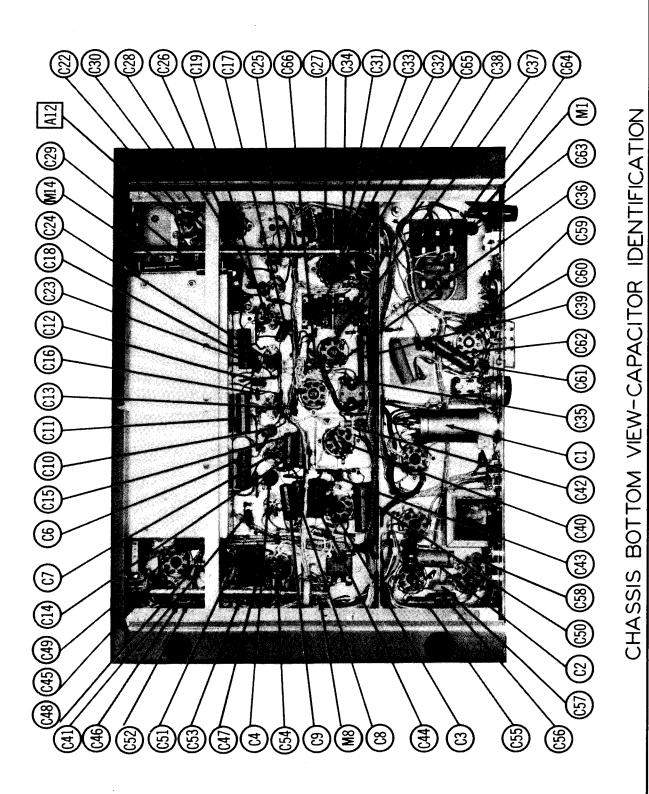


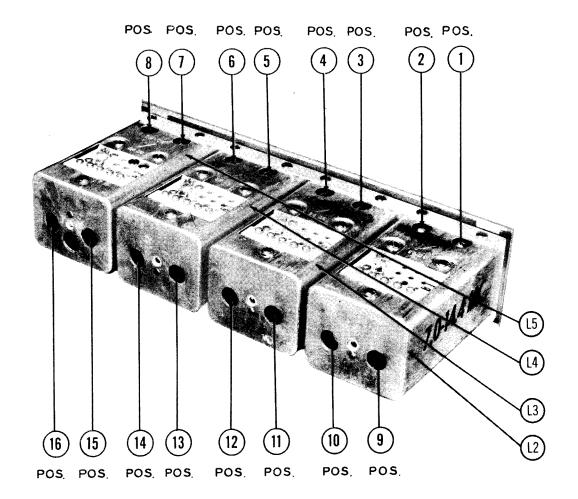
TRADE NAME	National Model HRO-6	0		
MANUFACTURER	National Co., Inc., 61	Sherman St., Malden 48,	Mass.	
TYPE SET	AC Operated Multi-Ba	nd AM Superheterodyne (	Communications Receiver	
TUBES	Eighteen			
POWER SUPPLY	110-120 Volts AC	RATING	1.0 Amp@ 117 Volts AC	
TUNING RANGES	Coil Set A B C D F G H	General Coverage 14-30 MC 7-14, 4MC 3.5-7.3 MC 1.7-4.0 MC 900-2050 KC 480-960 KC 180-430 KC 100-200 KC	Bandspread 27.0-30.0MC 14.0-14.4MC 7.0-7.3MC 3.5-4.0MC	
	J AA	50-100KC	27.5-30MC	
	AB AC AD	25.35MC	21, 0-21, 5MC 50-54MC	

### HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial con-

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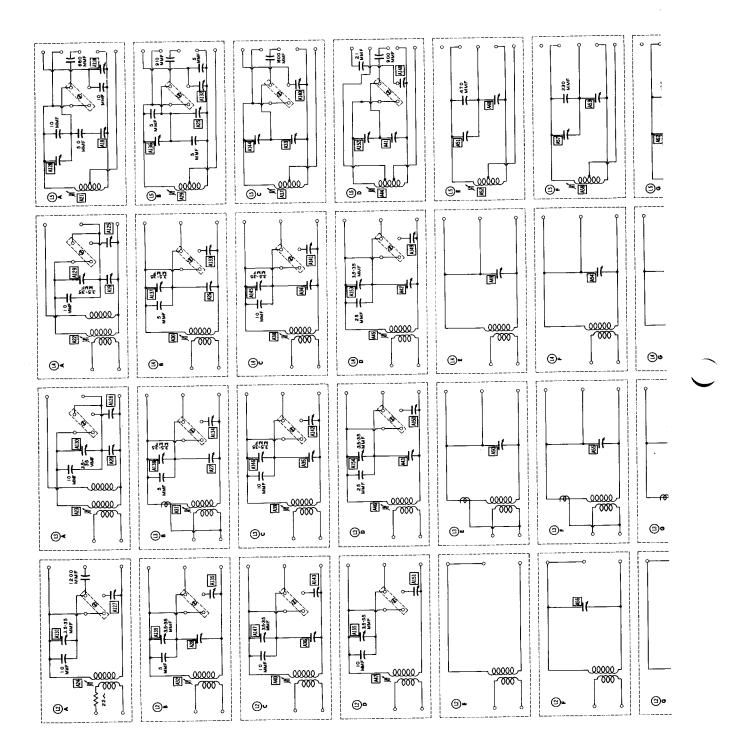
### PLUG-IN COIL SET

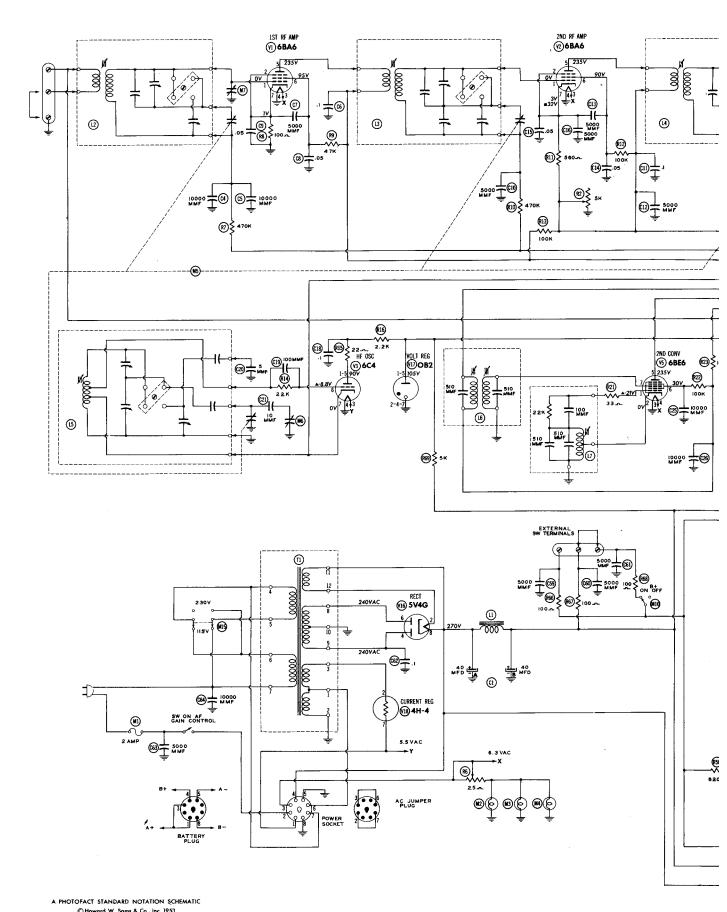
NOTE: INDUCTANCE ADJUSTMENTS AT POSITION NO. 16 ARE AS FOLLOWS:

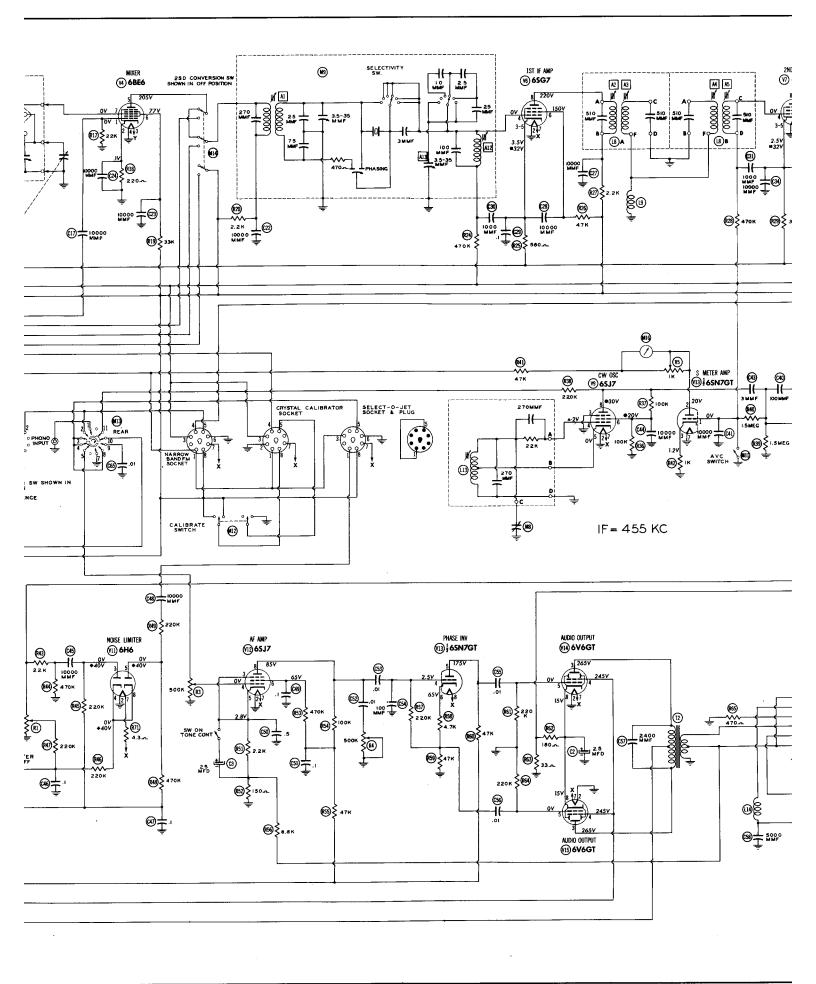
- l. A, B & C Coil Sets --- Loop of wire inside coil form -- bending the loop one way or the other adds or subtracts to the inductance.
- D Coil Set --- Adjustable disc inside coil form --- moving the disc toward the center of the coil decreases inductance.
- 3. E, F, G, H & J Coil Sets --- A short-circuited turn of wire around the outside of the coil --- moving this turn up or down varies the inductance.

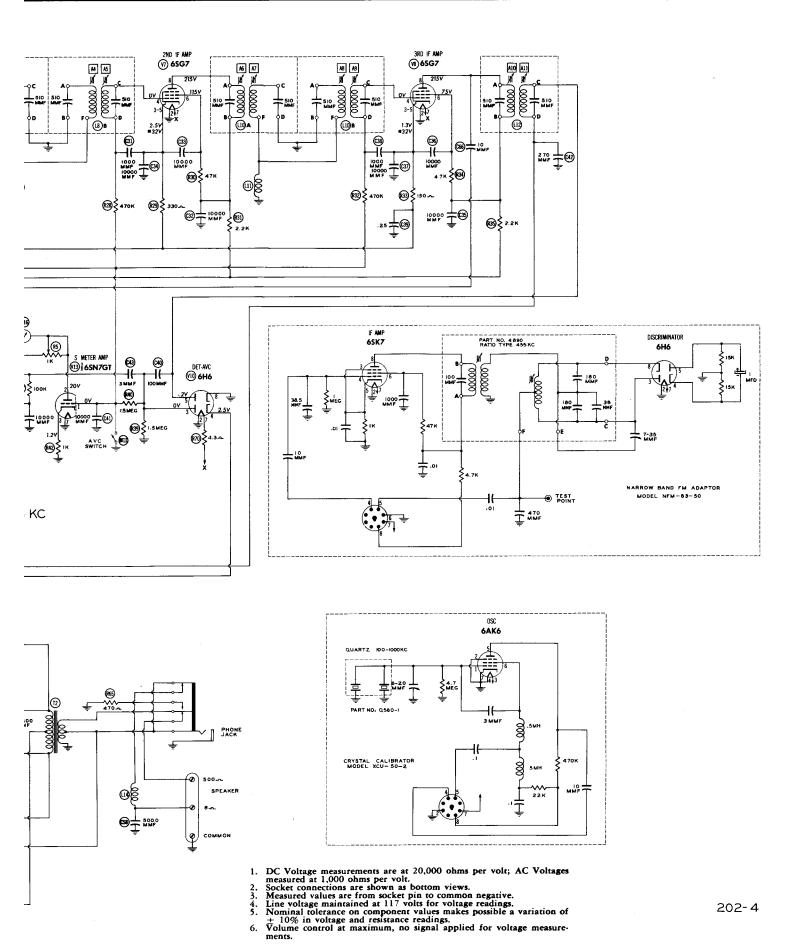
Inductance adjustment at position Nos. 9, 11 & 13 of coil sets A, B, C, D, AA, AB, AC & AD is a loop of wire inside coil form --- bending the loop one way or the other varies the inductance.

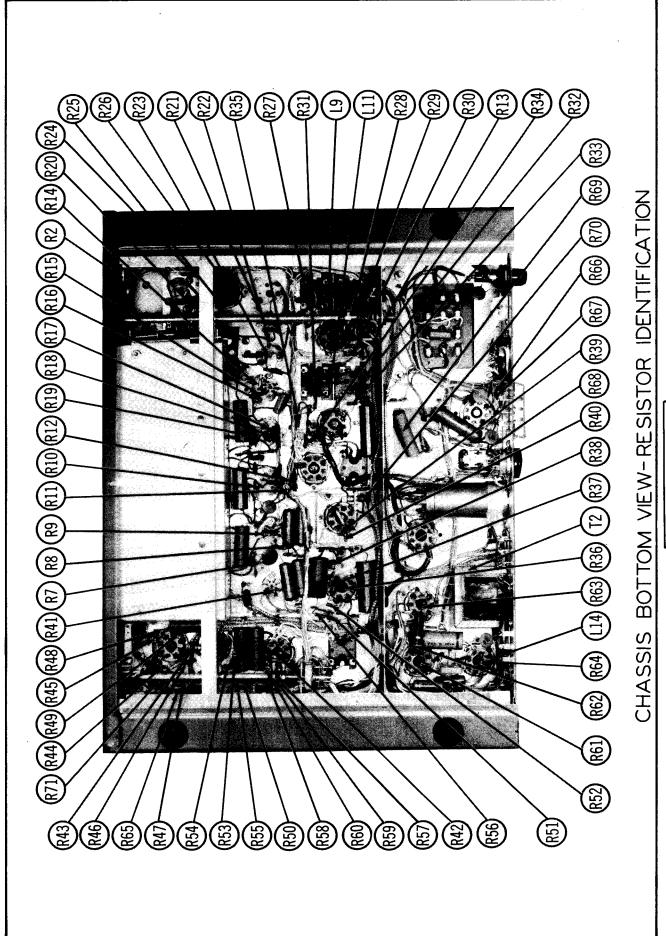
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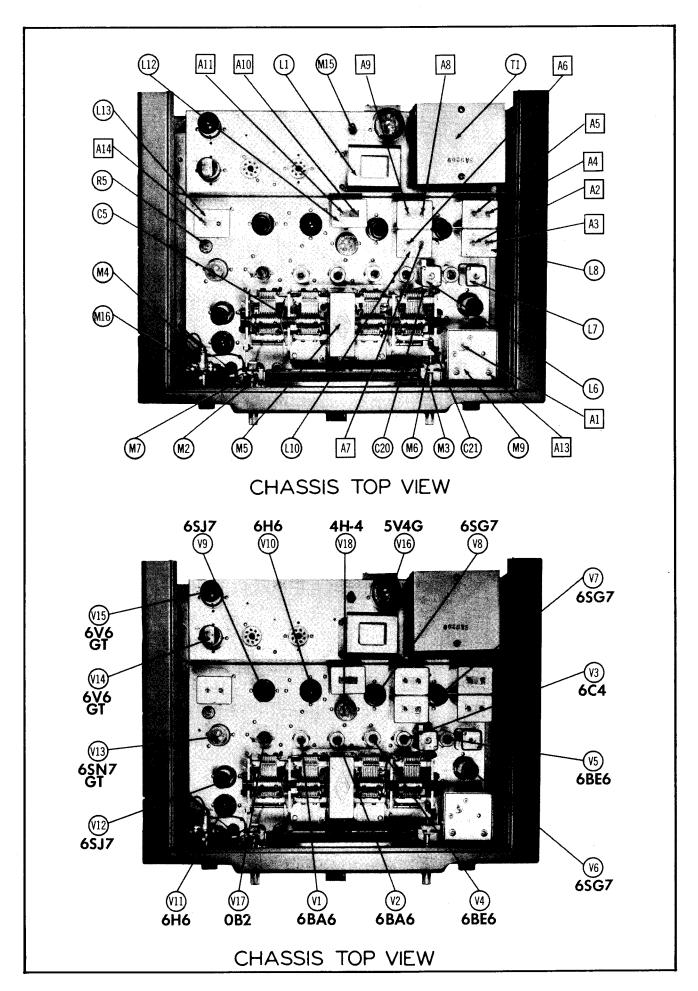












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COILS (RF-IF) (CONT) REPLACEMENT DATA	NOTES		B Band, 7-14.4MC	D Band, 1.7-4MC F Band, 900-2050KC	F Band, 480-960KC G Band, 180-420KC	H Band, 100-200KC J Band, 50-100KC	AA Band, 27-30MC AB Band, 25-35MC	AC Band, 21-21.5MC AD Band, 50-54MC	A Band, 14-30MC, Tertiary Winding-8.50	B Band, 7-14.4MC C Band, 3.5-7.3MC	D Band, 1.7-4MC E Band, 900-2050KC	F Band, 480-960KC G Band, 180-420KC H Band, 100-200KC	J Band, 150-100KC	AB Band, 25-35MC AC Band, 21-21.5MC	AD Band, 50-54MC A Band, 14-30MC, tapped	B Band, 7-14.4MC, tapped C Band, 3.5-7,3MC, tapped	D Band, 1.7-4MC, tapped (2).3% and (2). 6%	E Band, 900-2050KC	F Band, 480-960KC G Band, 180-420KC H Band, 100-200KC	J Band, 50-100KC AA Band, 27-30MC	AC Band, 21-21.5MC AD Band, 50-54MC		Includes .0001MFD cap.	<b>a</b> .1a		Part of L8A		Part of Li0A	Includes 22Kn resistor &	270MMF cap.; tapped @ . 80	A 1 Microhenry		BUSS	PART No.
	PART NO																														CLA			
CONT	MEISSNER PART No																																REPLACEMENT DATA LITTELFUSE	No.
PLS (RF-IF REPLACEMEN	MILLER PART No.																															FUSES	REPLACEM	PARI
	NATIONAL PART No.	SA:6751	SA: 9258	SA: 6637	SA: 6662 SA: 6667	SA + 6669 SA : 6809	SA:9247 SA:6818	SA:8074 SA:9262	SA:6752	SA:9259 SA:6642	SA:6338 SA:6789	SA:6794 SA:6800 SA:6804	SA: 6810 SA: 9248	SA: 6676 SA: 8075	SA: 9266 SA: 9254	SA: 9260 SA: 6760	SA: 6676	SA: 6631	SA:6795 SA:6785 SA:6805	SA:6811 SA:9249	SA: 9268	SA: 9205	SA:9203	-	SA:8448	SA:6072	SA:8448	SA:6072	SA: 3363 SA: 9193		SA:3992	ш	NATIONAL	RT No.
	ES.	200	15.	27.					и 0	ni. 22.	.72											.90			2.40	2.40	2.40	2.40	2.53				NAT	6
	DC RES.	ļ:	4.80			_			-	9.52		. <del>.</del>				SI.						ა6.			2.23	2.28 00	2.20		2.40 40		003		<u> </u>	N N
	USE	lst.RF Trans.	RF Trans.	F Trans.	lst.RF Trans.	VF Trans. VF Trans.	lst.RF Trans.	R Trans. R Trans.	2nd.RF Trans	2nd.RF Trans. 2nd.RF Trans.	2nd.RF Trans	2nd.RF Trans 2nd.RF Trans 2nd RF Trans	RF Trans	2nd.RF Trans.	2nd.RF Trans HF Osc.Coil	Osc. Coil Osc. Coil	HF Osc.Coil	Osc.Coil	HF Osc. Coil HF Osc. Coil HF Osc. Coil	Osc. Coil	HF Osc. Coil	2010KC IF Trans.	1555KC Osc. Coil	2nd.IF Trans.	ut Ta Bases	Zna.1F 1Fans. Input RF Choke	3rd.IF Trans input	3rd.IF Trans Output RF Choke	4th.IF Trans. BFO Coil		Speaker Output Choke			<u> </u>
7	ž ė	L3A lst.F			F lst.F						E 2nd	T Sud	I 2nd	L K	M 2nd L5A HF	B HF	D HF	HF			N H H		L7 1555]   Coil	L.8A 2nd				~	LIS 4th		L14 Spe		ITEM	ģ
	NO N												Note 1			Ī	E E					-				NOTES		Note 2						
•	SPDAGUE	PART No.	171-WOG	5HK-SI	4TM-P1	4TM-Pl	4TM-PI	6TM-P1	6TM-SI	5HK-D5	SHK-D5 5HK-D5	5HK-D5 6TM-P1		5GA-QI			INSTALLATION NOTES		Limiter & Switch RF Gain-Wire Wound AF Gain	to R3A to R3A	to R4A	eter Adjustment to R5A	er 1 to R6A		NI DATA	IRC PART No.			BTS-2200 BTS-470K BTS-150	BTS-47K BTS-2200	BTS-100K BTS-100K	BTS-220K BTS-1, 5Meg	BTS-1.5Meg BTS-47K	BTS-22K
	V4011444	PART No.	1700-00	DC-511	PT401 DC-511	PT401	PT401				DC-525 DC-525	DC-525 PT601					i	- 1							REPLACEMENT DATA	NATIONAL PART No.	1569-29 1569-57	J569-45	1569-29 1569-57 1569-15	J569-45 J569-29	J569-49 J569-49	J569-53 J569-63	J569-63 J569-45	J569-25
,	FRIF	PART No.	GF4K-4(1	821-01 821-01	821-01	!		118-101	GP2-333-103 GP2-333-103	-005	811-005 811-005	-005	6ш-003	GP1K-100			MALLORY	+	U-48	Not Req. US-26	Not Red	R1000L	R25L Not Req.			RATING HMS WATT	-14-14	-14-14-	~ C	v- m- m	- a- a-	-le-le	- 12-12-12-12-12-12-12-12-12-12-12-12-12-1	
CTNO	REPLACEMENT DATA	BILIER No.		,			PTE4P1		PTE6SI GI		TM5D5 8U			5W5Q1 GI	<u>د</u>		CENTRALAB	PAKI No.	B-60-S	Not Req.	Not Req.	Not ned	V-III Not Req.	SS.	L	No. OHMS			R31   2200Ω R32   470KΩ R33   150Ω					12 1000% 13 22KΩ
CAPACITORS (CONT.)	REPLACE PALAR CO	PART No. PA												100 5WE	CONTROLS	DEPLACEMENT DATA	CLAROSTAT		Z-09-	51 m 5	7-09-5	1-1000	A43-25 RS-2	RESISTORS		NOTES	2 2	22		- 2	26.24	<u> </u>	, K. K.	À À
APACIT			D0-211	00-00 00-00	DF-104	DF.	DF-104	DF-	D6-103		DD-502			D6-100	anon (Far	PEPI ACE								<del>Z</del>		ۏ	×						9 ;	<u> </u>
CAPACITORS (CONT.)	000	PART No.	SIZIO	BPD-01	P488-1	P488-1	P488-1	P688-1	P688-01	RPD-005	BPD-005 BPD-005	BPD-00! P688-1	1467-01	SI10	uns applic		SE SE	PART No.	013-133	Not Req. 76-1	Not Req.	W-100	W-25 Not Req.		REPLACEMENT DATA	PART No.	BTS-470 BTS-100	BTS-47F	BTS-100K BTA-100K	BTS-22k	BTS-2200 BTS-22K	BTS-22( BTA-331	BTS-220	BTS-100K BTS-10K
	NATIONAL.	PART No.	J633-2 T695-4	K946-2 K946-2	L217-35 K946-2	L217-35	L217-35	D827-7	L217-16 1.217-16	J667-68 K946-1	K946-1	K946-1 L217-36	K946-1 J666-56	N946-2 D825D-473	Some Models use .ulmr'D in this application (rart #1840-2)		NATIONAL		J681-2 K349-4 K347-1	Not Req. Not Req.	Not Req.	D831-2 Not Red	K915-13 Not Req.		REPLACEA	Z Z	l	J569-45 J569-57	1569-22 1569-49 1571-49	J569-41 J569-5	J569-29 J569-41	J569-17 J571-43	1569-29	J569-49
	RATING	—÷			400	9 5	96		009	000		900	200	9 90	ne Models		<b>∠</b>  -	WATTS	G G G	_	G J :	 	, t 			RATING OHMS WATT		KD KD	5600 100K0 100K0	35 2	000 000 000 000	200	2000	KO.
		. 1		10000	17.1			50.5			2000			<u>-</u>	Note 1. Son	-	RES	-	500KΩ 5000Ω 500KΩ							¥ 2€	-		R11 560 R12 1001					
		ž	C42 C43	C45	C47	20.5	388	30,5	ີ່ວິວິວິ	35.5	085 085 085 085	999	388	38	z	L	Z Y	.	2 2 2 E		R4A B	32	R6A B		L	SET	202			LDER		45 PE		¥ Œ

# **PARTS LIST AND DESCRIPTIONS (Continued)**

RESISTANCE READINGS

### DIAL LIGHTS

					REPLACEMENT DATA	IT DATA	
Ş ĕ	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	NATIONAL PART No.		NOTES
M2	Bayonet	3-8	.15	Brown	F136-6		Type #47
M3	Bayonet	9-8	.15	Brown	F136-6		Type #47
M4	Bayonet	6-8	.15	Brown	F136-6		Type #47

### **MISCELLANEOUS**

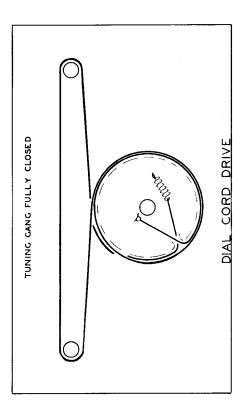
citor	ľ	1		
Tuning Capacitor 584867  Tuning Capacitor 1967-31  Tuning Capacitor 1967-32  Tuning Capacitor 1967-32  Tuning Capacitor 1967-32  Trimmer Capacitor 19657-32  Trimmer Capacitor 19657-32  Capacitor 196352-30  Trimmer Capacitor 198352-30  Trimmer Capacitor 198352-30  Trimmer Capacitor 198352-30  Capacitor 198352-43  Capacitor 19835-43  Switch 1984-5  Dial Scale 1984-5  Dial Scale 1986-7  Dial Scale 1986-8  Dial Scale	φĔ	PART NAME	NATIONAL PART No.	NOTES
Tuning Capacitor 1957-32 Columber 1950-41 Capacitor 1952-2 Capacitor 1952-2 Capacitor 1952-41 Capacitor 1952-4		Tuning Consolitor	240627	Paris (4 Continue)
Tuning Capacitor 7957-32  Tuning Capacitor 7957-32  Tuning Capacitor 7957-32  Trimmer Capacitor 7957-32  Trimmer Capacitor 79557-32  Capacitor 79520  Capacitor		Taming Capaciton	200001	Main (* pecuons)
Tuning Capacitor 1957-32 Tuning Capacitor 1957-32 Tuning Capacitor 1957-32 Coll Trimmer B500-6 Capacitor 1955-30 Trimmer Capacitor 19555-301 Trimmer Capacitor 19555-301 Trimmer Capacitor 19555-301 Trimmer Capacitor 19555-411 Capacitor 19555-41 Capacitor 19555		Tuning Capacitor	1957-31	OSCILLATOR
Tuning Capacitor   1987-32   Coil   Ask202   Coil   Ask202   Trimmer Capacitor   D8250-41   D8250-41   Capacitor   D8250-41   Capacitor   D8250-41   Capacitor   D8250-42   Capacitor   D8250-42   Capacitor   D8250-41   Capacitor   D8250-41   Capacitor   D8250-42   Capacitor   D8250-41   D8250-1		Tuning Capacitor	1957-32	Antenna
Coult   SA4202   Coult   Capacitor   Capacitor   Capacitor   D8250-41   D8250-41   D8250-41   D8250-41   D8250-41   D8250-6	_	Tuning Capacitor	1957-32	CW Osc. Adj.
Capacitor   D8250-411   Capacitor   D8250-411   Capacitor   D8250-411   Capacitor   D8250-412   Capacitor   D8250-449   Capacitor   D8250-449   Capacitor   D8250-420   Capacitor   D8250-410   Capacitor   D8250-420   Capacitor   D8250-410   Capacitor   D8250-420   Capacitor   D8250-410   Capacitor   D8250-410   Capacitor   D8250-410   Capacitor   D8250-40   D8250-10   D8250-1	<	Coil	SA 9202	IF Input
Capacition D825D-411 Capacition D825D-301 Capacition D825C-301 Capacition D825D-449 Variable Capacition D825D-449 Capacition D825D-411 Capacition D825D-41 Cap	_	Trimmer	H500-6	IF Drimont
Capacitor Des25.201  Capacitor Des25.201  Crystal Capacitor D832.2  Capacitor D832.2  Capacitor D832.2  Capacitor D835.436  Switch Capacitor D835.416  Capacitor D835.426  Capacitor D835.416  Capacitor D835.	_	Committee of the control of the cont	2000	STATE OF STA
Capacitor   D825.2-301     Capacitor   D825.2-301     Capacitor   Capacitor   D825.449     Capacitor   Capacitor   Capacitor   Capacitor   Capacitor   D825.41     Switch   E230.2     Switch   R027.1     Switch   R027.1     Switch   R027.1     Switch   R346.4     Dial Scale   D136.4     Dial Scale   D136.4     Dial Scale   D136.8     Dial Scale   D136.8     Dial Scale   D136.8     Dial Scale   D136.8     Dial Scale   D136.2     D136.2   D136.2     Capacitor   Capacitor     Capacitor   D136.2     D136.2   Capacitor     Capacitor   D136.2	_	Capacitor	D825D-411	Spirit POUVDC
Crystal   D832-2   Crystal   Capacitor   D832-2   Capacitor   D825D-449   Capacitor   Capacitor   Capacitor   Capacitor   Capacitor   Capacitor   D825D-411   D826-10   D826	=	Capacitor	D825C-301	75MMF 500VDC
Crystal Capacitor D825D-449  Switch Capacitor D825D-449  Switch Capacitor D825D-411  Switch B220-2  Switch E230-2  Switch E230-2  Switch E340-4  Switch E340-4  Meter D131 Scale D136-15  D131 Scale D136-16  D131 Scale D136-16  D131 Scale D136-1  Knob Scale D136-1  Scale D136-1  Knob Scale D136-1  Scal	-	Trimmor Canaditor	0 6660	Main Maniphic of School
Crystal   B879-1     Capacitor   D825D-449     Variable Capacitor   D825D-426     Switch   D825D-411     Capacitor   D825D-412     Capacitor   D825D-411     Capacitor   D825D-411     Coli   SA5201     Switch   D825D-411     Resistor   D825D-411     Switch   D825D-41     Switch   E230-2     Switch   E230-2     Switch   E30-2     Switch   E30-2     Switch   D825-1     Switch   D825-1     Switch   D825-1     D12 Scale   D136-1     D13 Scale   D136-3     D13 Scale   D136-8     D13 Scale   D136-1     D13 Scale   D136-2     D14 Scale   D136-2     D15 Scale   D136-2     D16 Scale   D136-2     D17 Scale   D136-2     D18 Scale   D136-3     D18 Scale   D136-3     D18 Scale   D136-4     D18 Scale   D136-4     D18 Scale   D136-2     D18 Scale   D18-2     D18 Scale   D		Trumiter Capacitor	7-700	at lable 5.0-50 WINT
Capacitor	_	Crystal	E979-1	_
Variable Capacitor SA9190     Variable Capacitor SA9190     Switch B925-436     Capacitor D825D-431     Capacitor D825D-431     Capacitor D825D-431     Capacitor D825D-431     Coli SA9201     Resistor E230-2     Switch E230-2     Switch E230-2     Switch SA654     Switch E330-2     Dial Scale P136-16     Dial Scale P136-17     Knob Scale P136-20     Dial Scale P136-20     Dial Scale P136-20     Dial Scale P136-20     Dial Scale P136-20     Switch Swit		Canacitor	D895D_449	
Variable Capacitor SAMI90	_	Capacitor	C11-0000	^
Switch   E195-1   Switch   Capacitor   D832-2   Capacitor   D832-41   Capacitor   D83250-41   Capacitor   D8350-41   Capacitor   C	~	Variable Capacitor	SA9190	ntrol /
Capacitor D832-2  Capacitor D832-4  Capacitor D825D-411  Coll S625-411  Switch S230-2  D13 Scale P136-15  D13 Scale P136-15  D13 Scale P136-19  D13 Scale P136-19  D13 Scale P136-19  D14 Scale P136-19  D15 Scale P136-10  D15 Scale P136-11  Knob Scale P136-14  SA6867  Knob Scale SA6867  Knob Scale SA6867  Knob SA6867  SA6867  Knob SA6867	_	Switch	E195-1	_
Capacitor D8350-426 Capacitor D8350-411 Capacitor D8250-411 Capacitor D8250-2 Capa	_			_
Capacitor D8255-426   Capacitor D8255-426   Capacitor D8255-411   Capacitor D8255-41   Capacitor D8255-41   Capacitor D825-41   Ca	-	Capacitor	D832-2	3.5-35MMF Mica
Capacitor D225D-411 Capacitor D225D-411 Capacitor D225D-411 Switch SA9201 Switch E230-2 Switch E230-2 Switch E230-2 Switch R027-1 Switch R027-1 Switch R027-1 Switch R027-1 Switch R027-1 D1al Scale D136-15 D1al Scale D136-15 D1al Scale D136-16 D1al Scale D136-16 D1al Scale D136-19 D1al Scale D136-10 D1al Scale D136-1		Canacitor	D825D-426	TOWNE SOUTH
Capacitor D8250-411 Capacitor D8250-411 Coil Resistor 5A9201 Resistor E230-2 Switch E340-4 Switch R027-1 Switch R027-1 Switch R037-1 Switch R037-1 Switch R037-1 Dial Scale P136-15 Dial Scale P136-16 Dial Scale P136-8 Dial Scale P136-8 Dial Scale P136-9 Dial Scale P136-9 Dial Scale P136-10 Knob Sad866 Knob Sad867	_			
Capacitor   D8255-411   Capacitor   Switch   Switch   Z530-2   D13 Scale   D136-15   D13 Scale   D136-10   D13 Scale   D136-11   Knob   SA6869   Knob   SA6869   Knob   SA6869   Knob   SA6867	-	Capacitor	D825D-411	25MMF 500VDC
Coil   SA\$201   Sesistor   7569-21   Switch   E230-2   Dial Scale   Sad865   Knob   Sad867   Knob   Sad868   Sad867   Knob   Sad86	_	Capacitor	D825D-411	25MMF 500VDC
Color   Colo	_		10000	
Newistor	_	Con	243501	Tr. Onton
Switch E230-2 Switch E230-2 Switch E230-2 Switch E230-2 Switch P738-1 Switch R027-1 Switch R027-1 Switch R027-1 Switch R027-1 Switch R037-1 Dial Scale P136-3 Dial Scale P136-3 Dial Scale P136-3 Dial Scale P136-3 Dial Scale P136-1 Scale P136-1 Scale P136-1 Scale P136-2 Scale P136-1 Scale P136-1 Scale P136-1 Scale P136-2 Scale P136-3 Scale P136-		Resistor	1569-21	$470\Omega \stackrel{1}{\sim} watt$
Switch Sw	_	Switch	0.000	, C. C.
Switch P.230-2 Switch P.230-2 Switch P.230-2 Switch R.250-2 Switch R.250-2 Switch R.250-1 Switch R.250-1 Switch R.250-1 Dial Scale P.256-15 Dial Scale P.256-16 Sale Scale P.256-16 State Scale P.256-16 Dial Scale P.256-16 State Scale P.256-16		DWILLI	E430-4	B+ Oll/Oll
Switch Sw		Switch	E230-2	AVC
Switch Scale Dial Scale Di	_	Omitah	1 0000	
Switch Switch Switch Switch Switch Switch Switch Switch Scale Dial Scale Sacie Dial Scale Dial Scal		DWILL	F 120-1	Cambrate
Switch Switch Switch Meter Met	_	Switch	SA6564	Function Selector
Switten  Meter	_		. 1001	
Switch         H340-4           Meter         1984-5           Dial Scale         P136-15           Dial Scale         P136-3           Dial Scale         P136-3           Dial Scale         P136-3           Dial Scale         P136-4           Dial Scale         P136-4           Dial Scale         P136-8           Dial Scale         P136-10           P13 Scale         P136-10           P13 Scale         P136-10           P13 Scale         P136-10           P13 Scale         P136-11           P13 Scale         P136-11           P13 Scale         P136-12           Rnob         SA6869           Knob         SA6871           Knob         SA6877           Knob         SA6867           Knob         SA6868           Knob         SA6869           Knob         SA6867           Knob		Switch	R027-1	2nd, Conversion On/Off
Meter   1984-5   1984-5   1984-5   1984-5   1984-5   1984-15   1984-15   1984-16   1984-16   1984-16   1984-16   1984-16   1984-16   1984-16   1984-16   1984-17   1984-18   1		Switch	H340-4	Ti Primary Selector
Dial Scale   P.136-15   Dial Scale   P.136-15   Dial Scale   P.136-15   Dial Scale   P.136-16   Dial Scale   P.136-17   Dial Scale   P.136-18   Dial Scale   P.136-18   Dial Scale   P.136-19   Dial Scale   P.136-11   Dial Scale   P.136-14   Dial Scale   P.136-16   Dial Scale   Dial Scale   P.136-16   Dial Scale   Dial Scale   P.136-16   Dial Scale			1 1001	
ccale P136-15  (cale P138-3  (cale P138-3  (cale P138-3  (cale P138-4  (cale P138-1  (	_	Janawi	1984-5	Signal Meter 0-1MA with 'S' scale
Coale   P186-16		Dial Scale	D136-15	Band "A"
ccate p13816 ccate p13816 ccate p1383 ccate p1383 ccate p1383 ccate p1381			01.001	::
icale P198-3  icale P198-1  icale P198-1  icale P198-1  icale P198-1  icale P198-2  icale P198-2  icale P198-2  icale P198-1  icale P198-2  icale P198-1  icale P198-2  icale P198-1  icale P198-2  icale P198-1  icale P198-2  icale P188-2  icale P188-3  icale P188-3  icale P188-3  icale P188-3  icale P188-4  ic		Dian Scale	P130-10	Ballu B
ccale P196-4  ccale P186-18  ccale P186-7  ccale P186-9  ccale P186-9  ccale P186-9  p186-10		Dial Scale	P136-3	Band "C"
Craic   Plan		Diol Soulo	1196.4	יילוי ליים
icale P186-17  (cale P186-18  (cale P186-9  (cale P186-9  (cale P186-9  (cale P186-9  (cale P186-10  (cale P186		Dian Stale	1-00-1	Daily D
icale P136-18  icale P186-7  icale P186-8  icale P186-9  P186-10  icale P186-10  icale P186-11  icale P186-11  icale P186-11  Saciale P186-11  Saciale P186-11  Saciale P186-14  Saciale P186-14  Saciale P186-14  Saciale P186-14  Saciale P186-14  Saciale Saciale  Saciale P186-18		Dial Scale	P136-17	Band "A" (Bandspread only)
cale P186-7 cale P188-8 cale P188-9 cale P188-9 cale P188-9 Cale P188-19 P188-19 P188-19 P188-2 Sale P188-3 Sale P		Dial Scale	D136-18	Band "B" (Bandenread only)
ccate P198-7  ccate P198-8  ccate P198-9  p198-9  ccate P198-11  ccate P198-11  ccate P198-11  ccate P198-11  ccate P198-11  p198-12  p198-22  p198-21  p198-31  p198		200	01.007.1	
ccale P195-8 ccale P195-9 ccale P195-10 ccale P195-10 ccale P195-10 ccale P195-20 ccale P195-20 ccale P195-21 SA687 SA687 SA687 SA687 SA687 SA687 SA687	_	Dial Scale	P136-7	Band 'C' (Bandspread only)
ccale P186-9 ccale P186-10 ccale P186-10 ccale P186-11 ccale P186-12 ccale P186-22 ccale P186-22 ccale P186-22 ccale P186-24 ccale P186-24 SA6888 SA6889 SA6889 SA6887 SA6887 SA6887 SA6887 SA6887 SA6887 SA6887 SA6887		Dial Scale	D136_8	Bond "D" (Bandenread only)
icale P136-19 (cale P136-10 (cale P136-10 P136-10 P136-10 P136-20 Cale P136-20 Sale P136-20 Sale P136-20 Sale Sale Sale Sale Sale Sale Sale Sale		Ciar Dougo	0-0014	(Company of the company of the compa
		Dial Scale	P136-9	
ccale P136-11 ccale P136-12 ccale P136-19 ccale P136-14 ccale P136-20 SA6868 SA689 SA6870 SA6871 SA6877 SA6887 SA6887		Dial Scale	D136_10	Bond "G" and "H"
ccate P185-11 ccate P185-12 ccate P185-20 ccate P185-20 SA688 SA688 SA687 SA687 SA687 SA687 SA687 SA687 SA687 SA687	_	Dian Ocarc	01-001-4	
icale P1038-19 cale P1038-20 cale P1038-21 cale SA7021 SA6889 SA6870 SA6870 SA6877 SA6887 SA6887 SA6887 SA6887		Dial Scale	P136-11	Band "J"
Scale P156-20 Scale P156-21 Scale P158-21 SA7021 SA686 SA687 SA687 SA687 SA687 SA687 SA687 SA687 SA687		Dial Scale	D133_19	Band "A A."
ccare P100-20 ccale P135-21 ccale P135-21 SA 6889 SA 6889 SA 6870 SA 6877 SA 6887	_		21-0214	4. Land 1. Lan
Scale P155-14 Scale P356-21 SA7021 SA6868 SA6870 SA6871 SA6871 SA6877 SA6887		Dial Scale	P136-20	Band "AB"
Scale P136-21 SA7021 SA668 SA668 SA687 SA687 SA687 SA687 SA687 SA687 SA687 SA687 SA687 SA687		Dial Scale	D136-14	Band "AC"
Scate P193-21 SA7021 SA6889 SA6870 SA6871 SA6877 SA6887 SA6887 SA6887	_	200		
SA7021 SA6868 SA6869 SA6870 SA6871 SA6877 SA6877 SA6886 SA6886	_	Dial Scale	P135-21	Band AD
SA6868 SA6870 SA6871 SA6871 SA6867 SA6887 SA6886 SA6886	_	Knob	SA7021	Tone, antenna trimmer and dimmer controls (3 Used)
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SA6970 SA6871 SA6867 SA6867 SA6587 SA6586		Knob	SA6869	Selectivity Control
SA6871 SA6867 SA6887 SA6587 SA6586 SA6586		Knob	SA6870	Limiter Control
SA6867 SA6587 SA6586 SA6586 CC SC ST SA6586		40.2	C A 6971	A To Control
SA6867 SA6887 SA6587 SA6586 GC Shaff OF342		Milon	SA00/1	Ar Gain Control
SA6587 SA6586 Co. Straff		Knob	SA6867	RF Gain Control
SA6586 SA6586		Kmh	SA6587	Function Selector
SA0300		1 - 12	0000	
_		Whoo	2A0300	Main I willing
		CW Osc. Shaft	O534-2	

†2.8KΩ 12.8KΩ #†150KΩ Pin 8 †150KΩ 100KΩ 2132 2130 GI. INF 100Ω 5600Ω ■ 600Ω Pin 7 10 1.8Ω INF ΩI. UI. ы. Ç. ΩI. <u>ي</u> 13 22 8 S 0.0 1600KΩ †100KΩ 1100KΩ ‡50**K**Ω †54KΩ Pin 6 †35KΩ 150KΩ 150KΩ 100KΩ 11**6**0Ω 22K \array 52KΩ 1202 IN. INF .80 120K0 #220K0 1.25Meg #470K0 17.7KΩ Pin 5 150KΩ 2.4KΩ 220KO 200KΩ 15000 †11KΩ 5200Ω ■150Ω †7KΩ INF INF 3.5Meg ¶500KΩ Pin 4 270KΩ ±300₽ †300G 22KΩ 332 25Ω 115Ω INF ಜ 30 ಭ Pin 3 2.4KΩ 00 5600Ω ■ 600Ω 5400Ω ■ 400Ω 5200Ω ■ 150Ω ‡1**6**0Ω 11800 1.80 1.80 1KΩ INF INF INF ဌ Œ. †50KΩ 100KΩ Pin 2 2202 70 .20 00 00 00 00 Ö 30 ಭ S 00 00 S 3.5Meg ¶500K% 3.5Meg ¶500K% 17.7KΩ 0Ω 3 Meg 10Ω 22KG 17KΩ  $22K\Omega$ INF ೦೦ ဗ 00 g 00 ೲ 00 00 6SN7GT EVEGT 6V6GT V 16 5V4G V 18 4H-4 6BA6 6BE6 6BA6 6BE66867 6SG7 6837 Tube 6SG7 6837 9Н9 0.00 9H9 9C4 V 13 V 14 V 15 V 10 = -۷ 1 2 ۷ ۱ ۲ > 4 > 5 9 > **&** > He H ^ > ٥ >

FUNCTION SWITCH IN "AM" POSITION UNLESS NOTED
LIMITER IN "OFF" POSITION UNLESS NOTED
B + SWITCH IN "ON" POSITION
CALLIBRATE SWITCH IN "OFF" POSITION
AVC SWITCH IN "ON" POSITION UNLESS NOTED
† MEASURED FROM PIN 2 OF VIG
† ARGAINED FROM PIN 2 OF VIG
† AVC SWITCH IN "CW" POSITION
† LIMITER SWITCH IN "CW" POSITION

\* LIMITER SWITCH IN "ON" POSITION

\* THE GAIN CONTROL AT ZERO



### ALIGNMENT INSTRUCTIONS

MAIN TUNING DIAL

The main tuning dial should normally give no trouble. If, however, the dial should become removed from the receiver it must not be operated until mounted on the capacitor shaft with set screws tight. This is because the dial is only designed to rotate for ten revolutions (0 to 500) and if turned afarther than this the mechanism will be damaged. When mounted on the capacitor, limit stops protect the dial. The procedure for remounting the dial is as follows:

1. Place the dial on the capacitor shaft, tighten set screws and turn the dial counter clockwise to fully mesh capacitor rotor plates so that the tips of the rotor plates are flush with the edges of the stator plates.

2. Loosen set screws and rotate dial slowly until the dial reading has decreased to zero.

3. Tighten the set screws.

4. Check position of rotor plates at some the set of the stator of the set of the stator of the set of the set of the stator.

3. Tighten the set screws.
4. Check position of rotor plates at zero. The tips of the rotor plates must be flush with the edge of the stator plates. A slight adjustment may be necessary and this is done by loosening the set screws, adjusting the position of the dial and tightening the set screws again.
If it is necessary to remove the dial at any future time, turn to 250 before removing the dial and do not disturb the setting of either the dial or capacitor until reassembled. If in doubt about the correct position, inspect the springs on the back of the dial. When the dial reads 250 these springs should be straight up and down, they must not be timed to one side.

springs on the back of the dial. When the dial reads 250 these springs should be straight up and down, they mu not be tipped to one side.

It is important that the backplate and dial do not become separated. The backplate is held in place by two springs so that its gear teeth mesh with the dial gear teeth in correct relationship for proper dial operation. If this backplate should be sprung out of place, it may return to an incorrect position and the proper dial numbers will not appear in the windows when the dial is used. To ascertain that the two parts are in correct position proceed as follows:

- Locate small window near outer periphery of dial backplate and also locate dial number window on face of dial which is 180 degrees removed from the small backplate window.
   Hold dial so backplate lies flat in palm of left-hand and with right hand rotate dial knob until 250 appears in previously located dial window.

- in previously located dial window.

  3. If dial is properly adjusted it will be noted that the pointer at the outer edge of the small window lines up with a marked tooth on the dial itself. It will be found that the dial and backplate can be moved so that the backplate pointer will mesh between teeth at points equidistant from marked tooth in either direction.

  4. If by checking as in paragraph 3 the dial is found not properly adjusted, it will be necessary to separate the backplate from the dial far enough to bring the two gears out of mesh and the re-mesh the two parts until the proper setting is found. A number of trial settings may be required before the correct mesh is found.

### SLIDE RULE TUNING DIAL

SLIDE RULE TUNING DIAL

The slide-rule tuning dial assembly has been adjusted at the factory for accurate synchronization with the micrometer dial. If not tampered with this mechanism will provide complete freedom of mechanical trouble over a long period of continuous use. It is driven by an anti-backlash tuning gear ganged with the main tuning dial. The slide-rule dial pointer is controlled by a string drive assembly.

If replacement of the string drive cord is required it will be necessary to remove the receiver chassis from its cabinet wraparound. Before removing the micrometer dial reference should be made to preceding paragraph for proper method of removal. Refer to the dial cord stringting diagram for the proper method of replacing the cord. After the cord has been replaced and before the receiver is returned to its cabinet the micrometer dial should temporarily be replaced and the slide-rule pointer correctly set in the following manner:

(NOTE: This procedure may also be used if a check is desired to assure that the slide-rule dial pointer is properly synchronized with that of the main tuning dial.)

1. Check the main tuning dial at zero on its dial scale. The tips of the rotor plates should be flush with the edge of the stator plates.

- 1. Check the main tuning dial at zero on its dial scale. Are tips of the 1000 places sold be edge of the stator plates.

  2. Set the Band Selector control so that the D coil set scale appears.

  3. Set the main tuning dial at 490 on its dial scale. Connect setting of the slide-rule dial pointer is 4 megacycles on the dial scale. Draw the slide rule pointer along the cord to its proper position being careful not to disturb the setting of the micrometer dial. After the correct setting has been obtained and use a small amount of glyptol or household cement to fasten the dial pointer securely in place on the cord.

### ALIGNMENT INSTRUCTIONS

This receiver has been accurately calibrated by the manufacturer and is very stable. Realignment should not be necessary unless the receiver has been tampered with or unless component parts or tubes have been replaced. It is preferred that the individual aligning the receiver be one who is familiar with communication receivers and experienced with alignment

To determine if IF Alignment is needed the following check should be performed:

- Adjust the receiver for normal operation with the antenna disconnected.
   Connect a pair of headphones to the phones jack.

2. Connect a pair of headphones to the phones jack.
3. Set the AVC switch at OFF.
4. Set the control switch to CW.
5. Set the phasing control at ZERO.
6. Set the crystal selectivity switch at "5".
7. Set the RF gain control at "10".
The AF gain control may be adjusted to a comfortable listening level and will not affect results.
Adjust the CWO control to a point where the predominate pitch of the background noise is lowest and a distinct ring of the crystal is heard. Note the setting of the CWO control.
Turn the crystal selectivity switch to OFF, and again adjust the CWO control for lowest pitch of background noise.
Compare this setting with the previous setting.
If the two settings are identical, the IF is properly aligned at the cyrstal frequency. If they are not identical perform IF amplifier alignment.

amplifier alignment.

### SECOND CONVERSION IF ALIGNMENT

The second conversion IF frequency of this receiver is 455KC plus or minus 2KC. The exact frequency is determined by the resonant frequency of the crystal in the crystal filter assembly.

Plug in the D range coil set.

Connect the high side of a signal generator output lead to the stator of the mixer section of the tuning gang. Connect the low side to the tuning gang frame.

Connect an output meter across the output terminals. Set the control switch to CW.

Set the AVC switch to OFF.
Set the phasing control at ZERO.
Set the selectivity switch at "5".
Set the AF gain control at "10".

Set the RF gain control at '9".

Set the RF gain control at '9".

Set the signal generator at approximately 455KC with the modulation off.

Set output of the generator to obtain approximately 100 microvolts.

Turn the CWO control to obtain a beat between 400 and 1000, cycles. The presence of the beat note may be checked by temporarily connecting a pair of phones to the phone jack. If difficulty is encountered in obtaining a beat note, adjust the BFO coil slug, Al4.

Slowly vary the signal generator frequency between 453 and 457KC. Somewhere between these limits the output will show a sharp peaked increase, this is the frequency of the crystal, and the frequency to which the second conversion IF is aligned. Turn the selectivity switch at "!".

Turn the control switch to "AM".

	Turn the s	ignal generator modul	ation ON.					
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4.	Direct	High side to stator on mixer section of tuning gang. Low side to tuning gang frame.	IF Crystal freq. (See note above) (400 Mod)	Coil set	Point of non - interference	Across out- put termin- als.	A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11	Adjust for maximum output. Attenuate signal generator to prevent overloading. The order of adjustment is not important.
2.	"		IF Crystal freq.plus 2KC.	"	. "	"	A12	Adjust for maximum output.
3.	"	77	IF Crystal freq.(Same as step l).	"	11	,,	A13	11
4.	11	"	"	**	"	.,	A14	Turn the selector switch to "CW". Adjust the CWO control to obtain zero beat. If zero beat does not occur at "O" on the CWO control knob, set knob at "o" and adjust Al4 for zero beat.

FIRST CONVERSION CONVERTER ALIGNMENT
Leave the signal generator connected as during Second Conversion IF Alignment.

Set the control switch to AM.

Set the AVC switch to OFF.
Set the phasing control at ZERO.
Set the selectivity switch at OFF.
Set the AF gain control at "10".
Set the RF gain control at "19".
Plug in the "B" range coils.

5

6

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY		RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5.	Direct	High side to stator of mixer section of tuning gang. Low side to frame of tuning gang.	2010KC (400∿Mod)	Coil set	Point of non- interference.	Across out- put termin- als.	A15	Adjust for a distinct peak on the output meter. If Al5 is badly misadjusted more than one peak may be found. The correct peak will be of much higher amplitude than any of the spurious peaks.
6.	**	11	"	,,	"	11	A16, A17	Adjust for maximum output.

GENERAL COVERAGE OSC. & RF ALIGNMENT

The general coverage portion of this receiver has been properly aligned at the factory, using precision crystal controlled signal generators. Alignment should not be attempted unless proper precision equipment is available.

The need for realignment of the discrete the high frequency oscillator is indicated by the calibration being off more than 1% at the high frequency of the discrete.

frequency end of the dial scale.

Particular care must be exercised when adjusting the HF oscillator trimmer in each coil set. Three different checking

The coil sets below 7MC must be adjusted so the oscillator frequency is higher than the RF frequency. The image frequency

should be 910KC below the signal frequency on the dial.

The oscillator for frequencies between 7MC and 35MC is set to the higher frequencies, but the image is 4020KC below

The oscillator for frequencies between 7MC and 35MC is set to the higher frequencies, but the image is 4020KC below the signal frequency. In some cases this frequency will be off the lower range of the coil set. In these cases special procedure must be used to check for the image.

In the 50MC to 54MC coil set, the oscillator must be adjusted to a frequency lower than the RF frequency.

The following methods should be used to ascertain that the oscillator is correctly adjusted on all coil sets:

1. When adjusting the oscillator in the coil sets below 7MC, the receiver should be tuned to a frequency 910KC below the RF frequency, at which point the image should appear. If it does not the oscillator trimmer should be decreased in capacity until the fundamental and image frequencies appear in correct positions on the dial.

2. When adjusting the oscillator on coil sets between 7MC and 35MC, the image must appear 4020KC below the RF frequency. In the cases where this frequency is beyond the range of the coil set, the receiver dial should be left at the proper frequency and the signal generator tuned to 4020KC above the RF frequency. It may be necessary to increase the generator output considerably to receive, the image. The image must appear at the present dial position for proper oscillator tracking.

3. The oscillator for the AD coil set must be adjusted to the low frequency side of the RF signal. In this instance the image must be located 4020KC above the RF frequency. Leave the receiver tuned to the RF frequency and tune the generator 4020KC lower than the RF frequency. It may be necessary to increase the generator output to obtain the image. If the image is not present at this point the oscillator is not correctly adjusted.

Set the control switch to AM.

Set the CORTOI SWITCH TO AM.

Set the AVC switch to OFF.

Set the RF gain control to "10".

Set the bandspread switches to general coverage.

Set the AF gain control to provide a suitable output level.

Check the position of the antenna trimmer and oscillator trimmer knobs. They should be set with the arrow pointing straight in

straight up. Correction of tracking errors in the RF and mixer stages at the low frequency end of each coil set is accomplished by adjustment listed in the table. The actual tracking may be checked by pressing the end plates of the tuning gang sections either closer or away from the adjacent plate (do not bend plate enough so that it will not spring back to its original position). A change in capacity in either direction should decrease the output.

SIGNAL SIGNAL BAND RADIO

	DUMMY	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7.	270Ω Carbon Resistors	High side thru $270\Omega$ to antenna terminal. Low side to chassis.	30MC (400∿Mod)	Plug in coil set "A".	30 MC	Across voice coil.	A18 (pos 8) A19 (pos 6) A20 (pos 4)	Adjust in order given for maximum output.
8.	,,	"	14.4MC	"	14.4MC	"	A21 (pos 16) A22 (pos 13) A23 (pos 11) A24 (pos 9)	Adjust in order given for max, output. Repeat steps 1 & 2 until no further improvement can be made.
9.	,,	"	14.4MC	Plug in coil set "B".	14.4MC	rr	A25 (pos 8) A26 (pos 6) A27 (pos 4) A28 (pos 2)	Adjust in order given for maximum output.
10.	,,	<b>1</b> 1	7.0MC	"	7.0 <b>M</b> C	"	A29 (pos 16) A30 (pos 13) A31 (pos 11) A32 (pos 9)	Adjust in order given for max. output. Repeat steps 9 & 10 until no further improvement can be made
11.	"	11	7.3MC	Plug in coil set "C".	7.3MC	**	A33 (pos 8) A34 (pos 6) A35 (pos 4) A36 (pos 2)	Adjust in order given for max. output.
12.	**	"	3.5MC	"	3.5MC	.,	A37 (pos 16) A38 (pos 13) A39 (pos 11) A40 (pos 9)	Adjust in order given for max.output. Repeat steps 11 & 12 until no further improvement can be made.
13.	"	Ħ	1.8MC	Plug in coil set "D".	1.8 <b>M</b> C	"	A41 (pos 8) A42 (pos 6) A43 (pos 4)	Adjust in order given for max. output.
14.	**		4.0MC	"	4.0MC	"	A44 (pos 16) A45 (pos 13) A46 (pos 11) A47 (pos 12)	Adjust in order given for max, output. Repeat steps 13 & 14 until no further improvement can be made
15.	"	"	2.0MC	Plug in coil set "E".	2.0MC	"	A48 (pos 8) A49 (pos 6) A50 (pos 4)	Adjust in order given for max. output.
16.	**	79	1 <b>M</b> C	"	1 M/C	"	A51 (pos 7)	Adjust for max. output.
17.	,,	tt	1.4MC	"	1.4MC	,,	A52 (pos 16)	Adjust for max output. Repeat steps 15, 16 & 17 until no further improve- ment can be made.

### ALIGNMENT INS

	DUMMY ANTENNA	SIGNAL GENERATOR	SIGNAL GENERATOR	BAND SWITCH
18.	"	COUPLING	.9MC	POS. Plug in coil se "F"
19.	,,,	"	.5MC	"F"
	<del></del>		<del></del>	
20.	"	**	.7MC	,,
21.	"	"	400KC	Plug in coil set "G".
22,	.,	"	200KC	**
23.	"	,,	300KC	**
24.	11	"	200KC	Plug in coil se "H".
25.	17	**	100KC	11
26.	.,	**	150KC	"
27.	"	17	100KC	Plug in coil set
28.	11	11	50KC	**
29.	11	**	75KC	er
30.	",	11	30MC	Plug in coil set "AA"
31.	11		27.2MC	
32.	11	ш	28MC	
33.			35MC	Plug in coil set ''AB''
34.	**	н	25MC	**
35.	**	**	30MC	"
36.	"	"	21.5MC	Plug in coil set "AC"
37.	**	н	21MC	**
38.	"	19	21.3MC	**
39.	n	11	54MC	Plug in coil set "AD"
40.	,,	ч	50MC	"
41.	.,	71	52MC	

### CTIONS (CONT.)

	1	CON	1.0
IO L NG	OUTPUT METER	ADJUST	REMARKS
_	"	A53 (pos 8) A54 (pos 6) A55 (pos 4) A56 (pos 2)	Adjust in order given for max. output.
_	"	A57 (pos 7)	Adjust for max. output.
	**	A58 (pos 16)	Repeat steps 18, 19, & 20 until no further improvement can be made.
	**	A59 (pos 8) A60 (pos 6) A61 (pos 4)	Adjust in order given for max. output.
	"	A62 (pos 7)	Adjust for max, output.
	"	A63 (pos 16)	Adjust for max. output. Repeat setps 21, 22 & 23 until no futher improve- ment can be made.
	:	A64 (pos 8) A65 (pos 6) A66 (pos 4) A67 (pos 2)	Adjust in order givenfor max. output.
	11	A68 (pos 8)	Adjust for max. output.
	11	A69 (pos 16)	Adjust for max. output. Repeat steps 24, 25, & 26 until no further improve- ment can be made.
	"	A70 (pos 8) A71 (pos 6) A72 (pos 4) A73 (pos 2)	Adjust in order given for max. output.
	"	A74 (pos 7)	Adjust for max. output.
	"	A75 (pos 16)	Adjust for max. output. Repeat steps 27, 28, & 29 until no further improve- ment can be made.
	"	A76 (pos.7) A77 (pos.5) A78 (pos. 3) A79 (pos.1)	Adjust in order given for maximum output.
	n	A80 (pos. 8) A81 (pos. 6) A82 (pos. 4) A83 (pos. 2)	11
	"	A84 (pos.16) A85 (pos. 13) A86 (pos. 11) A87 (pos. 9)	Adjust in order given for maximum output. Repeat steps 30, 31 and 32 until no further improvement can be made.
	"	A88 (pos.8) A89 (pos.6) A90 (Pos.4) A91 (pos.2)	Adjust in order given for maximum output.
	**	A92 (pos. 7) A93 (pos. 5) A94 (pos. 3) A95 (pos. 1)	"
	38	A96 (pos.16) A97 (pos.13) A98 (pos. 11) A99 (pos. 9)	Adjust in order given for maximum output. Repeat steps 33,34 and 35 until no further improvement can be made.
	"	A100(pos.7) A101 (pos.6) A102 (pos.4) A103 (pos.2)	Adjust in order given for maximum output.
	**	A104 (pos. 5) A105 (pos. 5) A106 (pos. 3) A107 (pos. 1)	"
	r	A108 (pos.16) A109 (pos.13) A110 (pos.11) A111 (pos.9)	Adjust in order given for maximum output. Repeat steps 36, 37 and 38 until no further improvement can be made.
	n	All2(pos.7) All3 (pos.5) All4 (pos.3) All5 (pos.1)	Adjust in order given for maximum output.
	**	All6 (pos.8) All7 (pos.6) All8 (pos.4) All9 (pos.2)	u
	,,	A120 (pos.16) A121 (pos.13) A122 (pos.11) A123 (pos.9)	Adjust in order given for maximum output. Repeat steps 39, 40 and 41 until no further improvement can be made.

BAND SPREAD OSC. & RF ALIGNMENT

It is important that general coverage alignment be performed before bandspread alignment, since general coverage alignment affects bandspread alignment. General coverage alignment is not affected by bandspread alignment, so if only bandspread alignment is required it may be performed separately.

The need for oscillator alignment of any band is indicated by the main tuning dial being off more than 5 divisions in either

direction.

The pre-alignment settings of the receiver controls are the same as for general coverage alignment, EXCEPT, that the

The pre-angiment settings of the receiver controls are the sale as its general coverage angiment, Excert, that the bandspread switch on each coil set must be switched to BANDSPREAD.

The low frequency tracking may be checked by making a slight adjustment of the trimmer capacitors at positions 1, 3 and 5. A slight change in either direction should decrease the output. The trimmers should be reset at the high frequency

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
42.	270Ω Carbon Resistor	High side thru 2700 to antenna terminal. Low side to chassis.	30MC (400∿Mod)	Plug in Coil Set	30MC	Across out- put terminals	A124 (pos. 7) A125 (pos. 5) A126 (pos. 3) A127 (pos. 1)	Adjust in order given for maximum output.
43.	,,	"	27.2MC	"	27.2MC	**	A128 (pos.15) A129 (pos.14) A130(pos.12) A131 (pos.10)	Adjust in order given for maximum output. Repeat steps 42 and 43 until no further improvement can be made.
44.	"	u	14.4MC	Plug in Coil Set "B"	14.4MC	,,	A132 (pos. 7) A133 (pos. 5) A134 (pos. 3) A135 (pos. 1)	Adjust in order given for maximum output.
45.	,,	"	14 <b>M</b> C	.11	14MC	"	A136 (pos.15) A137 (pos.14) A138 (pos.12) A139 (pos.10)	
46.	71	"	7.3MC	Plug in Coil Set "C"	7.3MC	11	A140 (pos.7) A141 (pos.5) A142 (Pos.3) A143 (pos.1)	Adjust in order given for maximum output.
47.	***	"	7.0MC	**	7.0MC		A144 (pos.15) A145 (pos.14) A146 (pos.12) A147 (pos.10)	Adjust in order given for maximum output.Repeat steps 46 and 47 until no further improvement can be made.
48.	**	;;	4.0MC	Plug in coil set ''D''	4.0MC		A148 (pos. 7) A149 (pos. 5) A150 (pos. 3) A151 (pos. 1)	Adjust in order given for maximum output.
49.	**	"	3.5MC	"	3.5MC		A152 (pos.15) A153 (pos.14) A154 (pos.12) A155 (pos.10)	Adjust in order given for maximum output. Repeat steps 48 and 49 until no further improvement can be made.

### FIRST RF STAGE ALIGNMENT WITH LOW IMPEDANCE TRANSMISSION LINE

If a low impedance transmission line is used with this receiver, it may be necessary to align the lst. RF Amplifier at the high frequency end of each band. To check for this possibility rotate the antenna trimmer control. The presence of two distinct peaks in output indicate that the RF Amplifier is tracking properly. Lack of a peak or presence of only one peak indicates improper tracking and need for correction.

### GENERAL COVERAGE ADJUSTMENTS

Set the band spread switches on each coil set to be aligned to general coverage.

Set the control switch to AM.

Set the control switch at OFF.

Set the selectivity switch at OFF.

Set antenna trimmer control knobs so the arrow points straight up towards top of set.

Set the AF gain control at "10".

Set the AF gain control at "10".

Set the AF gain to a suitable listening volume.

Coil sets A, D, E and G do not use a 1st. AF Amplifier general coverage trimmer, but are peaked by the antenna trimmer control over the full range of the coil set.

Connect the antenna feeders to the receiver antenna terminals and tune the receiver to the signal frequency first shown in the general coverage Osc. & RF Alignment table for each coil set (Coil set "A", 30MC, coil set "B", 7MC, etc.).

Peak trimmers as follows for maximum signal. or if no signal is available, for maximum background noise. Peak trimmers as follows for maximum signal, or if no signal is available, for maximum background noise.

Coil Set A	Adjust Ant, Trimmer Control
Coil Set B	Adjust A27 (pos. 4)
Coil Set C	Adjust A34 (pos. 4)
Coil Set D	Adjust Ant. Trimmer Control
Coil Set E	Adjust Ant. Trimmer Control
Coil Set F	Adjust A54 (pos. 2)
Coil Set G	Adjust Ant. Trimmer Control
Coil Set H	Adjust A65 (pos. 2)
Coil Set J	Adjust A71 (pos. 2)
Coil Set AA	Adjust A77 (pos. 1)
Coil Set AB	Adjust A89 (pos.2)
Coil Set AC	Adjust A101 (pos.2)

### BANDSPREAD ADJUSTMENTS

Set the bandspread switches on each coil set to be aligned to bandspread position.

Set the receiver controls in the same manner as general coverage.

Connect the antenna feeders to the receiver antenna terminals, and tune to the signal frequency first shown on the bandspread Osc. & RF adjustment table for each coil set.

Peak the trimmers as follows for maximum signal, or if no signal is available for maximum background noise.

Coil Set A Adjust Al25 (pos. 1)

Coil Set B Adjust Al41 (pos. 1)

Coil Set C Adjust Al41 (pos. 1) Adjust Al49 (pos.1)

### S-METER ADJUSTMENT

The "S" meter balancing resistor R5 is used to obtain zero meter reading in the absence of signal. Set the RF gain control at "O".

Set the AVC switch to AVC.

Set the control switch to AM

Adjust R5 until "S" meter reads zero.

**SET 202** FOLDER 4

# PARTS LIST AND DESCRIPTIONS

## **TUBES (SYLVANIA or Equivalent)**

	NOTES		•													-				
DTAAA	BASE	7BK	7BK	6BG	7CH	7CH	8BK	8BK	8BK	N8	0,	0,	8 <b>N</b>		8BD	7.8	ZZ	2F		
REPLACEMENT DATA	STANDARD REPLACEMENT	6BA6	6BA6	6C4	6BE6	6BE6	6SG7	• 6SG7	6SG7	6SJ7	9H9	9Н9	6SJ7		6SN7GT	6V6GT	6V6GT	5V4G	0B2	4H-4
REPLACEM	NATIONAL PART No.	6BA6	6 <b>BA</b> 6	6C4	6BE6	6BE6	6SG7	68G7	6SG7	6817	6H6	9H9	6817		6SN7GT	EV6GT	6V6GT	5V4G	0B2	4H-4
	USE	lst.RF Amplifier	2nd.RF Amplifier	H.F.Oscillator	Mixer	Converter	lst.IF Amplifier	2nd.IF Amplifier	3rd.IF Amplifier	C.W.Oscillator	Detector-AVC	Noise Limiter	AF Amplifier	Phase Inverter-	"S"Meter Amp.	Audio Output	Audio Output	Rectifier	Voltage Reg.	Current Reg.
	ž ė	7	Λ2	23	44	45	9.4	77	Λ8	62	V10	VII	V12	VI3		V14	V15	V16	VI7	V18
G	E 8																			

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

			ana raper c	and raper capacitors, and in minia. For Mica and Ceramic Capacitors.		101 MICG		capacitors.		
					REPL	REPLACEMENT DATA	ATA			
₹ġ	₹ 3	P. VOLT	NATIONAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL- DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTE
CIA	40	475	K945-3	AFH2-72		BO53		FP262	TVL-2830	
CZ	25	200	E338-4	PRS50/25		BR255A		TC36	TVA-1306	
ຮ	25	20	E338-4	PRS50/25		BR255A		TC36	TVA-1306	
C4	10000		K946-2	BPD-01	DD-103	TM581	821-01	DC-511	5HK-Sl	
င္မ	10000	200	J666-56	1464-01				MC475		
92	٦:	400	L217-35	P488-1	DF-104	PTE4P1		PT401	4TM-Pl	
C2	200		K946-1	BPD-005	DD-502	TM5D5	8II-005	DC-525	5HK-D5	
88	.05	95	L217-29	P488-05	DF-503	PTE485		PT415	4TM-S5	
ŝ	3 5	3	L411-29	P466-03	DF-505	TATES	200 110	P 1413	FULL DE	
35	3 -	400	1.217.35	D488-1	DE-302	DTFAD	200-00	DT401	4TM-DI	
18	2000	3	K946-1	BPD-005	DD-502	TW5D5	811-005	DC-525	5HK-D5	
Sign	2000		K946-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C14	.05	400	L217-29	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C15	.05	400	L217-29	P488-05	DF-503	PTE4S5	,	PT415	4TM-S5	
C16	2000		K946-1	BPD-005	DD-502	TM5D5	811-005	DC-525	SHK-D5	
5	10000	200	K946-2	1467-01				MC475		
8 5	-: :	<del>4</del> 00	L217-35	P488-1	DF-104	PTE4P1		PT401	4TM-Pl	
9 S	<u> </u>		D825C-304	SILOO	D6-101	TM5Ti	GPIK-101	UC-531	5GA-TI	
22.0	o 5		D825D-401	Odvers	TCZ-4-		NFOK-USO	CCC-1.7	STCCB-V47	
185	200		N946-9	O LUINTO	102-10	Three	NF0K-100	17-24	SHK-S	
3 6			V046.9	D-Can	מו-מנו	TW551	821-01	115-24	SHK-S	
252	10000		K946-2	BPD-01	DD-103	TM581	821-0	DC-511	5HK-SI	
C25	10000		K946-2	BPD-01	DD-103	TM581	821-01	DC-5II	5HK-S1	
C26	10000		K946-2	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C27	1000	_	K946-2	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C28	1000		K946-2	BPD-01	DD-103	TMS	821-01	DC-5II	5HK-SI	
C29	:	400	L217-35	P488-1	DF-104	PTE4P1	30.	PT401	4TM-Pi	
200	200		K375-4	0000	D6-102	TMSDI	GP2L-102	UC-521	SHK-DI	
38			N3/3-4	STIOOU OUTS	201-00	LMSDI	02-12-102 091 01	100-22	IN ANS	
38			K946-2	ווי-מספ	- dc	TWSS	821-01	15-26	SHK-SI	
34	10000		K946-2	BPD-01	DD-103	TM581	821-01	DC-511	5HK-SI	
C35	1000		K946-2	BPD-01	DD-103	TM581	821-01	DC-511	5HK-SI	
C36	1000		K946-2	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C37	10000		K946-2	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-SI	
238	000	9	K375-4	SII000	DC-102	TM5D1	GP2L-102	UC-521	5HK-DI	
650	52.5	200	L217-48	P288-25		P12P25	101	PT4025	2TM-P25	
25 25 25 25 25 25 25 25 25 25 25 25 25 2	900		D825D-421	S1100	D6-101	TM5T1	GP1K-101 821-01	UC-531	5GA-TI	
5	700	_	7-01-0	DID	ממי-מת	T WOOD	10-130	10-01	our contract	_

# **PARTS LIST AND DESCRIPTIONS (Continued)**

RESISTORS (CONT.)

			KEPLACES	KEPLACEMEN DAIA					KEPLACEM	KEPLACEMENI DAIA	
¥ 2	RATING	ပ္	NATIONAL	IRC	NOTES	TEX	RATING	ပ္	NATIONAL	IRC	NOTES
ė	OHWS	WATT	PART No.	PART No.		2	OHWS	WATT	PART No.	PART No.	
R47	220KB	-102	1569-53	BTS-220K		98	47KΩ	-10	J569-45	BTS-47K	_
R48	470kB		J569-57	BTS-470K		R61	220KΩ	<b>→(</b> 0	1569-53	BTS-220K	
R49	220KΩ	-100	1569-53	BTS-220K	_	R62	1800	~	J572-16		
<b>R</b> 50	820KΩ	<b>⊢</b>  «	1569-60	BTS-820K		R63	330	,- ci	1569-7		
R51	22002	HIN	1569-28	BTS-2200		R64	220Kn	-IN	1569-53	BTS-220K	
R52	1502	-10	1569-15	BTS-150		R65	4702	~	1572-21	BTB-470	
R53	470KΩ		1569-57	BTS-470K	•	R66	1002	-(10	1569-13		
R54	100KΩ	-40	J569-49	BTS-100K		R67	1000	-10	1569-13		
R 55	47KΩ	-100	J569-45	BTS-47K		R68	1000	<b>→</b>   ≈	J569-13		
R56	\$0089	10	1569-35	BTS-6800		R69	50002	2	E959-10	1 3/4A-5000	
H57	220KΩ	-10	J569-53	BTS-220K		R70	4.30	~	K098-48		
R58	47002	<b>⊸</b>  N	1569-33	BTS-4700		R71	4.30	~	K098-48		
R59	47KΩ	bes	J569-45	47KΩ 3 J569-45 BTS-47K							

Note 1. May be from  $100\Omega$  to  $1000\Omega$ . Individually chosen to meet Note 2. Some Models use a  $150\Omega$  resistor in this application.

## TRANSFORMER (POWER)

٦		٦			,			7	
	TRIAD	TARE NO.							
,	CHICAGO	LAKI NO.							
KEPLACEMENI DAIA	MERIT	FAK NO.							
KEPL	STANCOR	FAKI NO.							
	NATIONAL	PAKI NO.	SA9209						
		SEC. 3	6.3VAC	@ 4.6A		SEC 4	13VAC	3 . 46A	
	SATING	SEC. 2	TI IITVAC 550VCT 5VAC	е Э					
	¥	SEC. 1	550VCT	.130ADC					
		PRI.	117VAC	alA with	tap for	230VAC			
	Z E		ī						

# TRANSFORMER (AUDIO OUTPUT) REPLACEMENT DATA

	SELON					
	74197	A FOLD	PARI NO.			
-	00.000	200	PAKI NO.			
	TIGET	MER	LAKI NO.			
	CTANCO	SIANCOR	PAKI NO.			
	MATTONAT	TUTUTU	PAKI No.	P187-1		
		RES.	SEC.	212	Tap @	. 66Ω
(	KAIING	DC RES.	PRI.	3120CT 210		
	₹	ANG	SEC.	2003	Tap®	83
		IMPED	PRI.	8.2KG 500G	CI	
_	TEM	ģ		T.2		

### FILTER CHOKE

	TRIAD PART No.		
· ·	CHICAGO PART No.		
PLACEMENT DAT	MERIT PART No.		
RE	STANCOR PART No.		
	NATIONAL PART No.	SA1694	
	(O CURRENT 1000	17HY	
RATINGS	D. C. RESISTANCE	2900	
	TOTAL DIRECT CURRENT	.065A	
	Ş ĕ	ï	

### COILS (RF-JF)

						KERIACEMENI DAIA	<u> </u>			_
₹ è	USE	SE	8	DC RES.	NATIONAL	MILLER	MEISSNER	IRC BABTAL	NOTES	
			PRI.	SEC.	PAKI No.	FAKI NO.	FAKI NO.	FAKI NO.		_
1.2A	Ant.	Trans.	.20	00	SA:8363				A Band, 14-30MC	
æ	Ant.	Trans.	.32	.20	SA:6755				B Band, 7-14.4MC	
Ü	Ant. Tr	rans.	38	.20	SA: 6759				C Band, 3.5-7.3MC	_
Ω	Ant. Tr	Trans.	.50	.72	SA: 6635				D Band, 1.7-4MC	
(H	Ant. Tr	rans.			SA: 6513				E Band, 900~2050KC	
Ç.		Trans.			SA:6660				F Band, 480-960KC	
ď		rans.			SA: 6665				G Band, 180-420KC	
Ξ	Ant. Tr	rans.			SA: 6803				H Band, 100-200KC	
-	Ant. Ti	Trans.			SA: 6808				J Band, 50-100KC	_
, 1-	Ant. Tr	Trans.			SA: 6814				AA Band, 27-30MC	
×	Ant. Ta	Trans.			SA: 6675				AB Band, 25-35MC	
1	Ant. Tr	Trans.			SA:8073				AC Band, 21-21.5MC	
Σ	Ant	Trans.			SA: 9261				AD Band, 50-54MC	